

18th COMPUTEX TAIPEI

Five days that redefine IT

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Your visit to the eighteenth COMPUTEX TAIPEI (Taipei International Computer Show) places you in the heart of the dynamic IT industry. Vendors and buyers know that past COMPUTEX TAIPEI shows have helped put Taiwan on the map by staging major IT changes, and this year's show (June 2-6) will be no exception.

Premiering in 1998 are top-notch professional conferences and seminars launched by the China External Trade Development Council (CETRA), and Taipei Computer Association (TCA), the organizers of the show.

So much is going on at COMPUTEX TAIPEI that we're giving seminar-goers a head start by beginning conferences one day before the show. On June 1, you can attend the greatly awaited "Inside the Tornado" conference, jointly sponsored by the show organizers and BYTE magazine. It will be chock-full of the cyber-visions and tips you need for high-tech marketing success.

Meanwhile, I apologize to the hundreds of companies who are still on the waiting list for the very limited space at COMPUTEX TAIPEI. If you didn't get a booth, please understand that we've tried our best. We've stretched this double-venue exhibition to record size in order to encompass 900 high-tech vendors. And, we're working to offer you more space at next year's show by hammering together a third venue.

For the first time in the show's history, 67 accessory companies will join with 22 world-famous computer firms in the Stellar Hall of the Taipei International Convention Center.

You will discover many hot products at the Taipei World Trade Center Exhi-



bition Hall in areas devoted to Computer Systems, Components & Parts, Communications, Board-level Products, Displays, Peripherals, Software & Applications, Overseas Exhibits, and the Trade Media. As in previous shows, the Convention Center will be open until 6 p.m. for the first four days, one hour longer than the Exhibition Hall.

I urge you to profit from and enjoy Asia's largest IT marketplace, COMPUTEX TAIPEI '98. To plan your visit in advance, drop by our Web site (<http://www.computextaipei.org>) for details on the conferences and seminars, as well as free services offered by us.

See you at the show!

Ricky Y.S. Kao

Ricky Y.S. Kao

Secretary General, China External Trade Development Council

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Confused by all the choices at the show?

Maybe we can help.

As you stroll down the aisles at Computex, you'll see that some products belong in a class by themselves. We've listed some of them here, and in subsequent pages of this guide, to give you an idea of what you'll find at the show. We've also included a handy scorecard you can use to jot down products, specifications, booth numbers, and pricing information as you tour Computex.

Get Connected to the Internet The Internet's increasing popularity has brought us several new ways to connect, from very high-end RAS servers to inexpensive devices whose sole purpose is to provide a quick connection.

NetPCs are coming on fast, for example, but manufacturers are hedging their bets by giving them PC-like features. FIC's PY-200 series are 82440LX- and BX-based NetPCs with optional snap-in expansion boxes that turn them into full-featured desktop units. Mitac's Essentia II, a NetPC that weighs a mere 5 kilos, also accepts desktop-style upgrades.

And there are various devices that let you navigate the Internet and access your e-mail, but that provide no storage or memory functions. Designs include set-top boxes, video game-type machines, and smartphones.

Acer's ST-300 is an example of a set-

top design based on a digital broadcast satellite receiver with an LSI logic engine. The ST-300 supports DVD functions including MPEG-2 and AC-3 decoding.

Moniputer A moniputer is an all-in-one system that can best be described as a cross between a desktop and notebook computer. Harking back to the original Macintosh design, the all-in-one monitor takes up very little space on a desktop. The moniputer works equally well as a home computer or connected to a corporate LAN.

Mitac's moniputer, prominently positioned at the show, sells for about 20 percent less than a comparable notebook. The Eco LCD PC offers a DSTN or TFT LCD screen, in 13.3- or 15-inch styles. The screen pivots 90 degrees, and the system operates on wake-up mode and LAN wake up, in the event that it is connected to a LAN.



PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Product type			
Platforms supported			
Additional features/Notes			
Volume pricing options			
Delivery options			

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Demand for Comm Tools Grows



With increased Internet traffic, demand for high-speed communications links and the tools to enable them is growing at an unprecedented pace.

Cable and telephone companies throughout the world are vying for a piece of the hottest communication action by offering high-speed designs. At the same time, more traditional modem manufacturers are pushing the speed envelope to the limits of standard dial-up connections. Devices that directly connect you to the Internet are emerging in all shapes and sizes, from T1 connections to set-top boxes.

When selecting a device, ask the vendor questions about the following important features. Your answers will help you select the most appropriate communications technology for your needs, geographic location (probably the most important consideration of all), and, of course, your budget.

Infrastructure support This is vital, since newer technologies are usually extremely limited in availability. What types of devices can I use in my local area? While analog telephone service or standard T1 lines are available in many areas,

your region may not support more exotic choices such as cable modem or ADSL.

Internet service availability Ask if your local Internet service providers (ISPs) support this communications device before buying. What are the additional charges for this service?

Top transmission rates When considering the purchase of a new communications technology, be sure to ask the vendor about the devices' maximum transmission speeds in both the upstream (user to host computer) and downstream (host computer to user) directions. With many newer technologies, upstream speeds can sometimes be a fraction of the overall downstream rate. ADSL, v.90 (formerly known as 56K), satellite, and sometimes cable modem transmissions fall into this area.

Typical connection costs The base Internet access price advertised by most ISPs is for standard analog phone connections. Switch to a faster transmission method, such as the ones listed below, and you may pay higher—sometimes much higher—prices in order to make your connections.

Configuration How does the device connect to your computer? Does it require an Ethernet card, PC expansion slot, or serial port? Does it require a separate power connection?

Technology types: 56K (V.90) The recent adoption of the V.90 standard means you'll see plenty of new modems (and upgrades for older modems) at this show. Check to make sure which 56K standards your ISP supports, however, before making a choice.

Cable Cable TV lines potentially can carry data hundreds of times faster than the best analog modems. Older systems are one way only. Two-way solutions, such as E-Tech's DataBurst, provide turnkey connections up to 2.56 Mbps upstream and 30 Mbps downstream for as many as 16 users.

ISDN The expense of Integrated Services Digital Network (ISDN) has prevented its widespread adoption. However, prices are dropping. At the show, look for E-Tech's TA128E/USB, an ISDN terminal adapter that features Multilink PPP at 128 Kbps using bandwidth allocation control protocol (BACP)/BAP. It supports USB interfacing.

ADSL An evolving standard, Digital Subscriber Line (DSL) technologies can move data as fast as 30 Mbps. Asymmetric DSL (ADSL) lets you use the same line for voice and data.

GVC's ADSL modem, highlighted at the show, is backward-compatible with V.90 and V.34 modems. It features PC-based implementation, easy deployment and installation, and provides ATM cell mode by supporting PPP over ATM.

T1 Need a fast, reliable connection? Try an old-fashioned T1 line. GVC's remote access server provides virtual private network (VPN) connections over the Internet using older 1.5-Mbps T1 technologies. It simultaneously offers four channelized T1/E1 connections for up to 96/128 Internet calls and two nonchannelized T1/E1 connections for a remote corporate LAN.

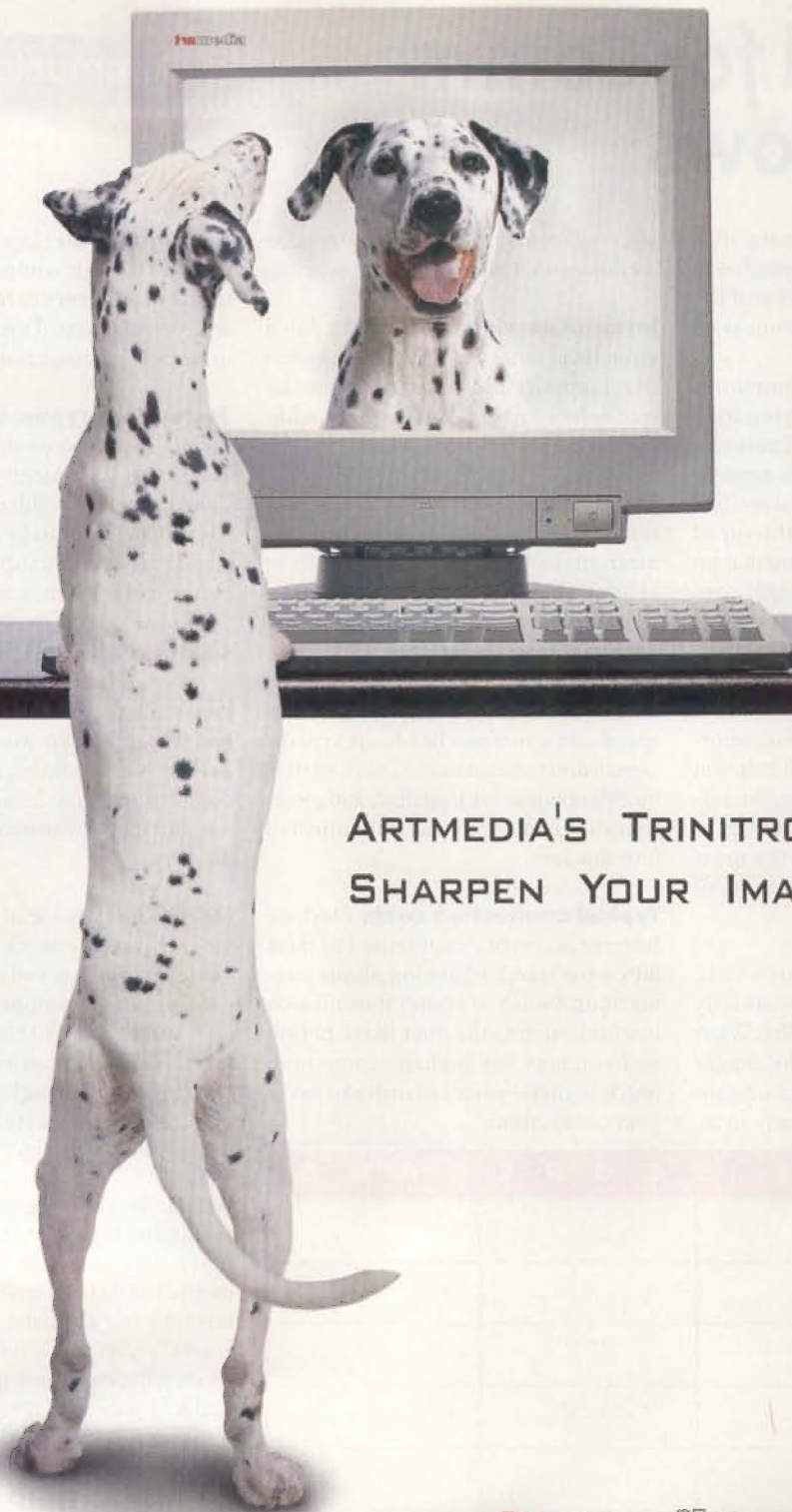
PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Infrastructure support			
Internet service availability			
Max. upstream/downstream speed			
Typical connection costs			
Configuration requirements			
Type of technology			
Volume pricing options			
Delivery options			



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JUNE 2-6, 1998

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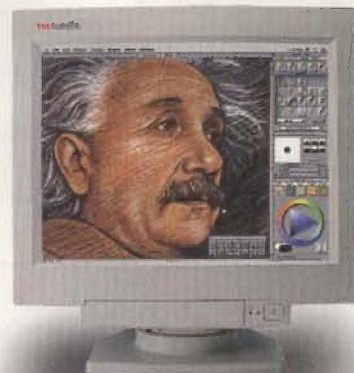
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Tried-and-True Monitors, New Prices



CRT Monitors

They're not as glamorous as newer LCD screens but cathode ray tube (CRT) monitors continue to dominate the display market. In selecting a CRT, the following are important specifications to keep in mind:

Tube type With CRTs, there are essentially three choices of tube: aperture grille, Invar shadow mask, and NEC's CromasClear. This year's Computex will include several variations on the technologies, but in general, the aperture grille displays a bright and crisp image; the Invar shadow mask produces a more detailed image, and the CromasClear is known for its excellent horizontal focus.

Size/Form factor The viewable screen area of a monitor is measured diagonally across the screen. Today's monitors are large, with 17 inches fast becoming the standard desktop size. With prices coming down and increased use of graphically oriented operating systems, 21-inch monitors are gaining popularity. For example, see the AcerView 211c from Acer Peripherals, a 21-inch CRT based on Hitachi's high-contrast CRTs. Mag's XJ910 is another 21-inch monitor that's worth a look.

The depth of larger monitors is a concern for many desktop users, and manufacturers have responded by offering mini-neck and short-depth CRTs, which take up less depth on the desktop while offering the same viewable screen area. Chuntex Electronics' 1995SL, making its debut at the show, is a 19-inch short-length mini-neck CRT monitor. Using Hitachi's super-high-contrast tube, the 1995SL consumes approximately the same amount of power as a traditional 19-inch unit.

Resolution Resolution (the number of pixels in a given space on the screen) is an important consideration. Lower resolution means less information on the screen,



but the text is larger and easier to read.

Dot pitch is the amount of space between phosphors of the same color. Measured in millimeters, dot pitches often range from .25 to .51 mm. Aperture-grille CRTs use a similar measurement, known as stripe pitch. In general, the smaller the dot pitch, the sharper the image on screen, but beware: Not all manufacturers measure dot and stripe pitch in the same way.

Refresh rate The refresh rate, measured in Hertz, tells you how many times per second the monitor redraws the image. A standard refresh rate is at least 75 Hz at 1024 by 768. Anything lower than 75 Hz shows a discernable flicker, which can result in eyestrain and fatigue.

USB standard The Universal Serial Bus (USB) standard allows you to connect up to 127 devices to a PC without internal cards or specialized slots. Mag Innovation's XJ810-U is a 19-inch monitor with Hitachi's high-contrast CRT that supports the USB standard. It offers an optional USB base, an integrated monitor base, and a USB hub.

Safety standards Low-emission monitors emit Extremely Low Frequency (ELF) or Very Low Frequency (VLF) electromagnetic radiation (EMR). But for those concerned with meeting the most stringent emissions standards, you're safest with monitors that adhere to TCO 95 or Swedish MPR II standards.



PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Tube type			
Form factor/Screen size			
Resolutions supported			
Refresh rate			
USB connections			
Safety standards supported			
Volume pricing options			
Delivery options			

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Flat Is All the Rage

Liquid crystal displays (LCDs) are not just for notebooks anymore. Advances in LCD technology have now made color LCD monitors available in larger sizes that are comparable to traditional cathode ray tube (CRT) monitors.

The attractive—and extremely fashionable—LCD panels take up far less room on the user's desktop than a standard monitor. They also come in a wide range of sizes; some ultrawide versions may be 48 inches (or more) across. Prices on these peripherals are dropping rapidly as the demand for them grows; you'll see some very affordable LCD models at the show.

Active or passive matrix Passive matrix is the less expensive of the two color technologies used in LCDs. The pricier active matrix or Thin Film Transistor (TFT) technology produces color that is as sharp and clear as that of a top-of-the-line CRT.

Passive-matrix displays using new CSTN and DSTN technologies, however, can produce sharp colors as well. In fact, some newer passive-matrix displays are every bit as sharp and high quality as their active-matrix cousins.

Size One of the biggest advantages of LCD monitors is that they are slim and don't weigh very much. That's why in the past this technology was used primarily for notebook computers. But today's lower costs are now making LCD monitors popular for integrated desktops such as miniputers.

Most flat-panel displays can also be mounted on a wall; some versions are actually used in well-appointed offices and homes as "dynamic art galleries." Many flat-panel displays offer optional wall-mounting kits for a nominal charge.

For an example of a high-quality large-screen LCD at Computex, take a look at Mag Innovision's LT810 and LT811, which are both 19.1-inch digital and analog active-matrix LCD monitors with maximum resolutions of 1280 by 1024 pixels.

LCDs are available in both landscape and portrait orientations. Landscape, with a greater horizontal dimension, is the more traditional. Some LCDs let you toggle between the two modes.

Analog vs. digital Most LCD monitors today are digital; analog, the technology most commonly used in stan-



dard CRT monitors, is relatively rare. You'll see some exceptions here at the show, however.

Acer Peripherals' AcerView F61, a 16.1-inch analog LCD monitor, for example, is built around IBM panels. It can provide a maximum resolution of 1280 by 1024 pixels. A digital version is in the works.

Speakers So that multimedia users won't have to go without sound, some LCD manufacturers include speakers in the base of the LCD. If your PC doesn't already have a sound system, this might be a desirable option.

Energy consumption Most LCDs consume very little energy, which makes them perfect for portable use. Large LCDs are also very energy efficient. If efficiency is a concern, look for those that meet Energy Star, MPR-II, or TCO 95 standards.

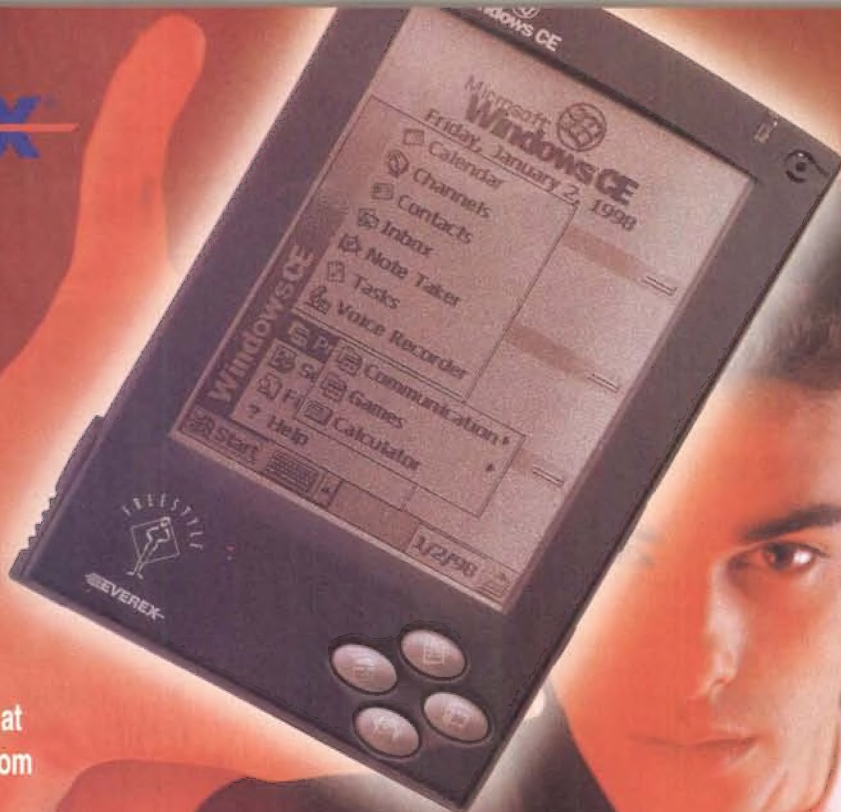
PanelLink Keeping electro-magnetic interference (EMI) levels down is a major concern for notebook manufacturers. As LCDs offer higher resolutions with greater color depths, more data lines are needed to run from the display to the motherboard.

PanelLink is a technology developed by Silicon Image that enables notebook manufacturers to reduce the number of signal lines between the motherboard and flat-panel display. Acer Peripherals' AcerView F50 is a 15-inch digital LCD that comes with a PanelLink interface.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Technology used			
Form factor/Screen size			
Analog/Digital?			
Speakers included?			
Energy consumption			
Panel link included?			
Volume pricing options			
Delivery options			

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Computing in the Palm of Your Hand



In the past, hand-held and palmtop computers failed to take the computing world by storm. Their screens were largely thought to be difficult to read, if not unviewable, their keyboards were too small for adult hands, and they offered very few useful software applications.

Today's hand-held computers are a radical change from those early designs. They offer much better screens, function-oriented applications, larger keyboards or more responsive writing surfaces, and operating systems that more easily synchronize with your desktop system.

When choosing a palmtop or hand-held computer, first consider how you plan to use it. If your only real need is to keep track of names, phone numbers, and a few days' worth of appointments, you'll want a simple and inexpensive organizer.

On the other hand, a powerful new hand-held can do real computing work. Some of the latest models even double as presentation devices. Many of the hand-held computers making their debut at Computex can display PowerPoint slide presentations.

For the best success, make a list of your requirements first, then look for the device that has features and options that most closely match your work style. The

features we've listed here correspond to the most common user needs.

Operating system Microsoft's Windows CE is an operating system designed for hand-held and palmtop computers. While not every manufacturer has embraced the Microsoft operating system, CE is a standard. Some manufacturers offer proprietary operating systems, which still have a full slate of functions. But if you want to go with a standard operating system, you may want to stick with Windows CE.

One of the hottest CE devices you'll see here, Hightech Computer's hand-held PC (HPC) VR-4111, uses a NEC MIPS 66- or 100-MHz processor, has 8 MB of RAM, and supports CompactFlash cards.

The hand-held also includes a 33.6-Kbps or 56-Kbps software fax/modem and an optional one-way pager card that lets you access Internet information, fax, modem, and telephone messages. It comes with a foldable cradle that serves as the docking station and recharger.

Form factor Hand-held devices range from tiny, plum-size two-way pagers with address-book capabilities to keyboard-style units that will never begin to fit into

the average business suit's shirt pocket.

Size and weight play an important role in the everyday use of a hand-held computer. Before you purchase any hand-held information appliance, make sure you'll be comfortable carrying the device for long periods of time.

Display type Hightech Computer's VR-4111 sports a 3.8-inch active-matrix color LCD screen with a maximum resolution of 240 by 320.

Of course, not everyone needs full color, or even multiple shades of gray, in a hand-held device. If your work involves mainly sending and receiving e-mail and faxes, for example, a monochrome display may be all you need. Some hand-helds offer touch-sensitive screens useful for handwriting recognition and application navigation.

Input One of the greatest deterrents to using a computer is not feeling comfortable with the keyboard or input device. Today's palmtops and hand-helds have come a long way in this area, and many now have keyboards that adults can use with ease. Most also come with small pen-like pointers that you touch to the screen as if using a mouse.

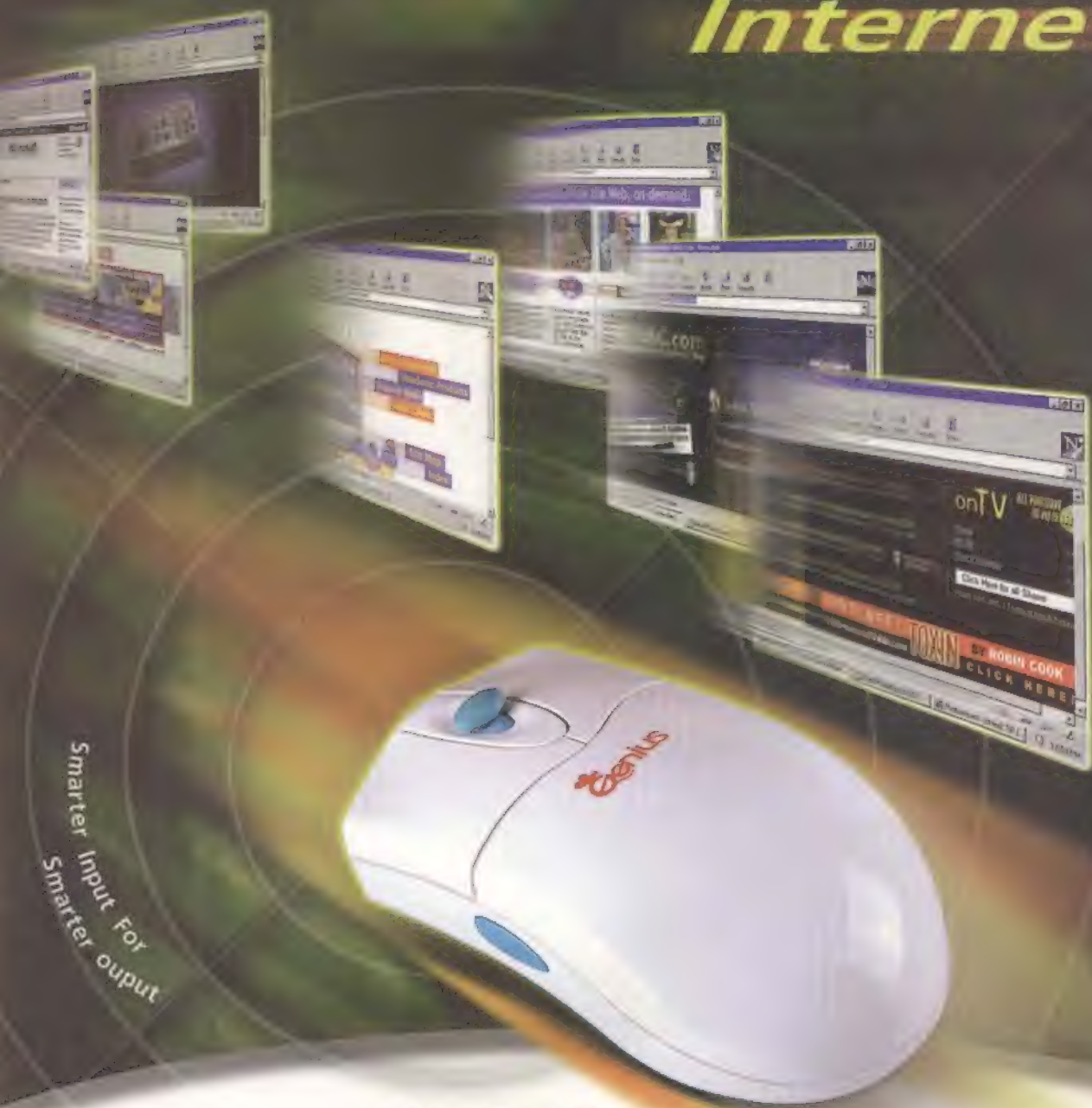
Connectivity options To connect to the home office when on the road, make sure your palmtop or hand-held comes with a modem. And for updating and synching files on your desktop system, look for a docking station such as that which comes with the Hightech VR-4111. Be forewarned, however, that compatibility with desktop applications can be a problem. What you run on your hand-held may not completely translate to your desktop.

Batteries Lithium-ion batteries will give you the longest mobile work sessions. To keep working while unplugged, opt for more than one battery. For the most practical power, look for a palmtop or hand-held that comes with a recharger. And be sure to check with the vendor on estimated battery life; adding a modem or other device to your hand-held can drop battery life dramatically.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Operating system supported			
Form factor (size, weight)			
Display type			
Input methods supported			
Connectivity options			
Batteries required/Estimated life			
Volume pricing options			
Delivery options			

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Computex Taipei
June 2-8 1998
Booth No. C410



New Ways to Deliver Data to the PC



Input Devices

Input devices let you enter text, graphics, and other data into the computer quickly and easily. Here's a list of some of our favorite input devices that you can expect to find on the Computex show floor.

Input devices run the gamut from the mice and keyboards found on virtually every PC to more exotic graphics tablets, voice-recognition systems, and joysticks. Each offers unique capabilities best-suited for particular types of data. The device you choose depends, in part, on the type and amount of data you'll be entering into the PC and the conditions under which you'll be working.

When choosing any type of input device, consider also the kind of connector you'll need to attach it to the PC. A serial or parallel connection, commonly required by some mice and graphics tablets, may prevent you from using other devices, such as printers, with your computer.

Other types of input devices may require the purchase of additional hardware and/or software before they will run properly. For more unusual devices or computer platforms, be sure to check first to make sure your system will support the new device.

Keyboards The keyboard is the most common input device. Most have a QWERTY typewriter layout, although there are many variations as far as placement of function keys and added features. For example, Silitek's SK-3100 is a 2-in-1 Smart-Card decoding keyboard. One of the input device highlights at this show, it has a card reader module integrated on the upper right corner. The keyboard (with the card decoder) connects through a single cable to the host's PS/2 port, or optionally through the USB interface. The device decodes all ISO 7816-3-compliant smartcards.

Mice A mouse is optimized for pointing, clicking, dragging, and dropping your way through the graphically oriented operating systems we use today. Most are based on optical or mechanical technology, with two to five buttons for selecting and manipulating text and graphics.

Some have a wheel that helps you automatically scroll through pages on the Internet. KYE's NewScroll is an Internet mouse with browsing gear that lets you turn Web pages without moving the mouse. The NewScroll comes with Easy-Jump software that enables customized HyperLink and double-clicking, and



the mouse comes in wired and infrared models. Infrared mice let you operate without a cord.

Pens Digital pens are mouse substitutes that are shaped like traditional pens but rely on handwriting-recognition or line-drawing technology for interpretation by the computer. Pens come in corded and cordless models, with most cordless models getting power from internal batteries. Most pens also come with touch-sensitive pads for use as a mouse.

Joysticks Joysticks plug into the 15-pin game port usually found on an audio card. In the past, joysticks were simple sticks that moved on x and y axes and had a single button. Today, joysticks are advanced digital-optical devices with molded handgrips, rapid-fire triggers, and special yokes, and some offer tactile feedback for full multimedia effect.

Tablets Digitizing and graphics tablets combine touch-pad and stylus technology. Designed for high-end graphics and CAD work, many tablets support resolutions of 1000 dpi and more. Pressure-sensitive tablets measure x- and y-axis coordinates. Some pressure-sensitive touch pads offer z-axis measurement as well.

Voice Voice-input systems can have vocabularies in the tens of thousands or more and can be used to control your computer as well as to input documents. If hands-free operation is a must, be sure any voice-recognition system you choose supports it. Many voice-input systems vary according to the rate of speech, measured in words per minute, that the system is capable of understanding.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Type (keyboard, mouse, etc.)			
Connector required			
Additional hardware required			
Additional software required			
Ergonomic considerations			
Additional features/Notes			
Volume pricing options			
Delivery options			

Trade Show Exhibitors' Guide

Name of Exhibitor

Booth Number(s)

A

A-Case Industrial Inc. C1035
A-Four Tech Co., Ltd. C413
A-Trend Technology Co., Ltd. D734
ARM. Microsystems Corp. D320
Aaeon Technology Inc. D525
Aamax Technology Co., Ltd. B335
Aashend Technology Inc. C522
Aavid Taiwan Inc. A704
ABA Locks Manufacturer Co., Ltd. C1030
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Startech Computer Products Ltd.	C1207	Texas Instruments Taiwan Ltd.	T402	Well Join Industry Co., Ltd.	B317
Startek Engineering Inc.	C1229	Tfi Lan Inc.	A413	Well Run Hardwares Co., Ltd.	T3063
State Of Arizona U.S.A. Department Of Commerce	B736	The Bauer Group Company	B128	Welland Industrial Co., Ltd.	C1130
State Of Utah International Business Development Office	B730	Tigerex Enterprise Co., Ltd.	C838	Wellong Electronics Co., Ltd	C923
Storage System Inc.	B333	Ting Immediately Industrial Co., Ltd.	T3026	Win Lan Enterprise Co., Ltd.	D724
Strong Man Ent. Co., Ltd.	C937	Tm-Link Inc.	C325	Win Technologies Co., Ltd.	D321
Sumdex Group Ltd.	T3036	Tone Tide Filter Web Co., Ltd.	T3024	Win Win Precision Industrial Co., Ltd.	A1322
Summit Computer Technology Co., Ltd.	B126	Top-Power Electronic Co., Ltd. Taiwan	C1036	Winbond Electronics Corp.	A508
Sun Echo International Co., Ltd.	T3066	Top-Thunder Technology Co., Ltd.	B124	Winco Electronic Co., Ltd.	D626
Sun Young Electronics Inc.	B433	Topbest International Inc.	T3020	Winfortune Enterprise Co., Ltd.	C123
Sunflower Systems, Inc.	B330	Topower Computer Ind. Co., Ltd.	A815	Wing-Tech Enterprise Co., Ltd.	A912
Sung Forn Co., Ltd.	C1037	Tops Ccc Products Co., Ltd.	D514	Wingtop	C836
Sungellit Corp.	T3091	Toshiba Electronics Taiwan Co.	B834P/B836P/B838P/B933/B935/B937	Winskon Cabling Specialist Co., Ltd.	A1212
Sunix Co., Ltd.	D622	Total Technologies Ltd.	C733	Wintech Electronics Corp.	A1015
Sunny Technologies Co., Ltd.	C334	Totem Technology Co., Ltd.	D614	Wintop Technology Inc.	B418
Sunnytekinformation Co., Ltd.	C811	Touchpls Technology Co., Ltd.	D313	Wiretek Computer Limited	C737
Sunnyview Technology Co., Ltd.	A713	Transcend Information Inc.	D325	Wonderful Wire Cable Co., Ltd.	A924
Sunonwealth Electric Machine Industry Co., Ltd.	A1225	Transverse Industries Co., Ltd.	T3059	World-Famous International Development Co., Ltd.	A307
Sunpower Technology Corp.	A822	Tremor Enterprises Co., Ltd.	C226	World-Top Enterprise Co., Ltd.	A1108
Sunrex Technology Corp.	B204	Trident Microsystems (Far East) Ltd.		Wytron Technology Co., Ltd.	C535
Suntek Compute Co., Ltd.	A1207	Taiwan Branch (B.W.I.)	B1136/B1138/B1235/B1236/B1237/B1238		
Super Elite Technology Co., Ltd.	C1031	Triple Force Inc.	B130	X	
Super Gate Technology Co., Ltd.	C636	Tripod Technology Corp.	C529	Xinetron Co., Ltd.	A114
Superpower Computer Co., Ltd.	D416	Truedox Technology Corporation	C726	Y	
Supertech Computer Co., Ltd.	A208	Trueful Electronics Co., Ltd.	C813	Yamadatech Industrial Co., Ltd.	C637
Surcom Technology Corp.	A134	Turbo Electronics Co., Ltd.	A909	Yeong Yang Technology Co., Ltd.	A1129
SVEC Computer Corporation	A221	Twincom Inc.	C931	Yes Technology Inc.	A1009
Symphony Group International Co., Ltd.	A916	Twinhead International Corp.	B310	Yes Way Enterprise Corporation	A1210
Syn Electronics Co., Ltd.	A913	Tyan Computer Corporation	B821	Yoga Electronics Co., Ltd.	C117
Syncan Corporation	C826	U		Yosun Industrial Corp.	C1119
Synertron Technology Co., Ltd.	D421	U-Strong Tech Corp.	A1217	Yuan Yuan Enterprise Co., Ltd.	D409
Syntech Information Co., Ltd.	C433	Ulan Co., Ltd.	A1209	Yung Fu Electrical Appliances Corp., Ltd.	C1124
Syntran Co., Ltd.	C1113	Ulead Systems, Inc.	B236	Z	
Sysgration Ltd.	C617	Ultima Associates Pte Ltd.	C1211	Z-Com, Inc.	A109
Systemsoft Corp.	B922/B924	Ultima Electronics Corp.	C212	Zebex Industries Inc.	C330
T		Umax Data Systems Inc.	B534	Zebie Corporation	A426
T-Best Corp.	T3096	Unfosa Technology Co., Ltd.	A1222	Zeck Enterprise Co., Ltd.	A808
T.N.C. Industrial Co., Ltd.	D526	Uni Class Technology Co., Ltd.	A210	Zero One Technology Co., Ltd.	C1223
TA Hsing Wood Enterprise & Musical Instrument Co., Ltd.	C126	Uniconn Corp.	A1013	Zida Technologies Limited	B926/B928
		Unicorn Computer Corp.	D606	Zippy Shin Jih Corp.	A1030
		Uniform Industrial Corp	A218	Zomas Associates & Co.Ltd	T3081
		Unifosa Enterprise Co., Ltd.	A724	Zylux Acoustic Corporation	C318
		Unikey Electronics Co., Ltd.	C824	Zykel Communications Corp.	A428

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Road-Warrior PCs

Notebook computers are now powerful enough to serve as desktop systems. But high function and portability make careful selection critical. For true portability, look for a notebook with a built-in modem or a modem on a PC card. If it's built-in, make sure it's upgradable so you can keep up with changes in communications standards.

The following are the most important factors in picking the right notebook from those you'll find at this year's Computex.

Processor/Clock speed Portable Pentiums abound, ranging from 75 MHz for entry-level uses to 300 MHz for demanding applications. Our advice: Buy the fastest processor you can afford.

Pentium II and MMX portables are now inexpensive enough to make them top choices. One such state-of-the-art notebook is Innolab's 9820 series, a 300-MHz Pentium II with a built-in camera, lithium-ion battery, 56-Kbps modem, two USB ports, up to a 15-GB hard drive, DVD-ROM drive, and more. The FIC 7000-series notebooks also have built-in digital cameras for truly portable video conferencing.

Hard drive/Memory options Bigger is always better when it comes to hard

disk size, but beware: Bigger can mean heavier. Look for a notebook with a hard drive capacity of at least 1 GB. If you need more storage space, a removable drive that can be connected through a parallel or SCSI slot, such as the Iomega Jaz, is a very good investment.

Upgrading memory later on is almost always expensive with notebook computers. Buy the most, and the fastest possible, with your new machine.

Display Screen sizes for portables start at about 9 inches and go up to over 14 inches. Here, too, remember that the larger the screen, the heavier (and often more expensive) the notebook. Active-



matrix (TFT) screens offer the advantage of clarity in a small design.

Size/Weight Notebooks can range from 4 pounds all the way up to a hefty 30 pounds, depending on battery weight, drives, and peripherals. Acer's Extensa 700 is one of the most compact and light all-in-one laptops currently available. It houses a CD-ROM, floppy, and hard drive, plus a fan, yet is only 44-mm thick and 6.7 pounds. Its exceptional light weight is the result of a new material, the details of which Acer is currently holding confidential.

For average use, look for a notebook that weighs around 6 pounds. If you truly need anything less, consider giving up the floppy or CD-ROM drive or moving to a subnotebook such as the Acer Extensa 310, which weighs only 1.2 pounds but includes a Pentium MMX and an 8.4-inch screen.

Battery Lithium-ion batteries are more expensive and are found in higher-end notebooks, but they recharge more efficiently than nicads and hold a longer charge. Thanks to lithium batteries, the Acer's TravelMate 8000 runs for 12 hours. The TravelMate 8000 is 45 mm thick and weighs 7.2 pounds.

Port replicator A port replicator connects to the back of the notebook, letting you connect a desktop monitor, keyboard, mouse, and other peripherals. For as little as \$100 extra, a port replicator makes taking your notebook from the desktop to the road as easy as plug and play.



PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Processor/Clock speed			
Hard drive/Memory			
Display			
Size/Weight			
Battery type/Est. battery life			
Options (such as port replicator)			
Volume pricing options			
Delivery options			

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Motherboards: Not Just for New PCs



The motherboard isn't just for new computers; motherboards frequently are used to upgrade older systems. That's more expensive than adding an accelerator board or a new processor, but a new motherboard's ability to accept faster memory and newer, more powerful components can speed overall performance, and may avoid potential compatibility problems.

Form factor When choosing a motherboard, first decide on the shape and style best-suited to your needs. Giga-Byte's GA-686BX is an excellent example of the "Baby AT" style, with new support for ACPI and BIOS-level compliance for Year 2000 problems. Baby AT motherboards generally require external connectors or add-in cards for all ports.

ATX, another common design, has on-board plugs for I/O, room for full-length cards in all slots, and a CPU that's often placed in front of the fan. Typified by Giga-Byte's new GA-686ABX, these generally offer more efficient cooling.

Processors supported Non-Pentium II or non-Intel CPUs such as those from Cyrix/IBM and AMD need a motherboard with a Socket 7 processor slot. Pentium

II processors require different—and much larger—Slot 1 connectors.

Advanced Information's DX6B and AX6B are excellent examples of Slot 1 configurations prominently displayed on the show floor. These are dual- and single-processor motherboards with an on-board Adaptec SCSI II controller. Each offers jumperless software configurations and a batteryless design with the BIOS backed up on an EEPROM.

Supporting chip sets The glue that holds everything together, support chips provide the links between the processor and BIOS, memory, etc. The latest chip sets from Intel, the 440VX and LX, combine a high degree of compatibility with support for the latest BIOS features.

You'll see the first examples of PCs with the fast new 100-MHz system bus—replacing today's 66-MHz version. They'll use Intel's latest chip set, the 440BX.

BIOS Best compatibility comes from sticking with name-brand BIOS manufacturers such as Award or Phoenix. Most chip sets today are flash-upgradable, so you'll be able to download the latest flash BIOS update, drivers, and other data from the manufacturer's Web site.



Memory Look for motherboards that support single or dual in-line memory modules (SIMMs/DIMMs). DIMM support offers fast new memory technologies like SDRAM, which promise better performance when coupled with faster processors and a faster system bus.

On-board peripheral support Today's modern motherboards support USB, dual IDE channels, dual serial ports, a printer port, and a PS/2 mouse. Some also include on-board SCSI and on-board sound chips instead of requiring a sound card.

At Computex, be on the lookout for Leadtek, scheduled to release a multimedia motherboard embedding the latest version of the all-in-one MPACT 2 engine. The combination integrates hardware 2-D and 3-D graphics rendering, DVD functions, and sound.

As PCI becomes more common, look for a motherboard with four or more PCI slots. To ensure compatibility with the widest possible range of add-in cards, make sure your choice also includes at least two ISA slots.

Watch for systems that include support for faster AGP graphics as well. Although few applications today support it, AGP promises performance boosts, particularly when combined with the coming 100-MHz system bus.

While not strictly necessary for most users, an infrared COM port, included on many of the motherboards you'll see at the show, is of value to the frequent traveler who needs to quickly synchronize laptop and desktop PCs.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Form factor			
Processors supported			
Supporting chip sets			
BIOS			
Memory			
On-board peripheral support			
Volume pricing options			
Delivery options			



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JUNE 2-6, 1998

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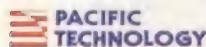
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Lights! Camera! Action!

Multimedia has become a catch-all category for devices that make, store, display, and manipulate images, videos, and sounds in almost any combination. Each has its own special requirements; we've listed some of the hottest at Computex.

DVD A high-density drive standard that holds up to 17 GB of data on a two-sided optical disc, DVD's been a long time in coming. New on the market: recordable DVD, a technology that not only brings top-quality video and sound to the desktop, but serves as a storage device as well.

But make sure your PC is up to the DVD challenge. You'll need good graphics with MPEG playback, and a high-quality sound card. Many DVD upgrade kits come with these options.

CD-RW Formerly known as CD-E (erasable), CD-RW uses phase-change tech-

nology to record, erase, and re-record data using discs. The results are readable in any CD-ROM drive that supports the new MultiRead specification.

Video/graphics boards When it comes to video memory, more is definitely better. Extra memory on a graphics card boosts your system's performance, since it allows more image processing to be done outside the CPU. Look for at least 4 MB; we recommend 8 MB or more. Gainward's AGP adapter, which uses the 128-bit RIVA 128 ZX chip from nVidia, comes in 4-MB and 8-MB versions.

Intel's new Accelerated Graphics Port (AGP) standard can boost graphics performance considerably, especially for games. It requires an AGP-bus slot or AGP graphics integrated on the motherboard. No AGP? Stick with PCI graphics.

For exceptionally high performance, the Glint chip is a top choice. Leadtek's

WinFast 3D L3100 AGP graphics adapter uses three Glint chips to perform setup, geometry, lighting, and rendering.

The WinFast 3D S800 all-in-one AGP graphics adapter uses the latest version of Mact2, integrating hardware 2-D and 3-D graphics rendering, complete hardware DVD function, TV-output, video capture, wavetable synthesis, and more.

MPEG is a video compression standard that achieves very high compression rates by storing only the changes from one frame to the next. MPEG-2 offers resolutions of 720 by 480 and 1280 by 720 at 60 frames per second, with full CD-quality audio, sufficient for TV broadcast. It's available in software applications or, for faster performance, on a video card that incorporates MPEG in hardware. Separate MPEG encoder/decoder adapters are also available.

Chromatic Research's Mact 2 is unique because it's a multimedia processor that can do just about anything, including 2-D and 3-D graphics acceleration with DVD decoding functions, Dolby AC-3 surround sound, support for 56-Kbps modems, and more.

Sound Few new PCs lack sound capabilities, but when shopping for a new sound card, look for Sound Blaster compatibility. The budget-minded can opt for sound cards using FM synthesis to translate digital data into sound but wavetable technology gives better-quality audio.

Digital cameras Three digital cameras you'll see at Computex take very different approaches to getting the job done. KYE's USB PC camera offers plug-and-play USB compatibility with Win 98 or NT 5.0. It transmits video data at up to 24 frames per second, fast enough for videoconferencing, and has an optional snapshot image-capturing capability.

Mustek's relatively low-cost VDC-810 is a 0.81-million-pixel digital video camera with a local CMOS sensor. For digital videoconferencing, Leadtek's TeleEye DM offers H.320-compliant transmissions. It comes with a 128-Kbps ISDN modem, a remote controller, and support for four inputs.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Technology			
Form factor			
Read only/ Write once/ Rewritable?			
Capacity			
Data transfer speeds			
Platforms supported			
Resolution/ Memory			
MIDI/Sound Blaster support?			
FM synthesis or wavetable translation?			
Volume pricing options			
Delivery options			

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New Tools to Connect to the Outside World



If the motherboard is the heart of a computer, the local area network (LAN) is its nervous system. PCs connect to a LAN through internal network interface cards (NICs). Network administrators install a router or switch on the LAN to connect multiple networks, or to give users Internet access.

Standard Ethernet connections, running at 10 Mbps, are fast becoming a thing of the past; look for Fast Ethernet (100 Mbps) and Gigabit Ethernet (1000 Mbps) at this year's Computex.

Network interface cards (NICs) A Network Interface Card plugs into a PC or server, connecting to other computers on the network via cabling. The most popular at Computex are likely to be combination 10/100-Mbps cards, which provide a built-in upgrade path to 100 Mbps.

Hubs The hub is the central connection point for wiring the network. An intelligent hub offers connectivity, internetworking, and network management. Hubs come in three configurations: stand-alone, stackable, and modular.

Stand-alone hubs are least expensive

but provide little or no network management. They're ideal for workgroups or small businesses on a budget. One popular stackable hub that does offer management capabilities, Accton's CheetahHub-3524, is at the show.

Stackable hubs also come in rack-mountable designs, such as D-Link's 2600. With the D-Link 2600, the user can start with a single device with four ports and add hubs to 120 ports per stack.

Routers A router intelligently connects one LAN to another and today is sometimes actually integrated with a server. Small office/home office (SOHO) users are eager customers for new, easy-to-manage routers, which offer extra configuration and maintenance software, coupled with telephone or ISDN connectivity, in a low-cost package. If you're in the mar-



ket for one, make sure it can be upgraded to faster communications technologies, such as T1, frame relay, and DSL or cable modem, as your needs expand.

Switches LAN clients connected to the same hub generally share a single 10-Mbps line between all ports. Switches, on the other hand, dedicate full bandwidth available on the network to every port they connect. A switch can interconnect an entire Ethernet or Token Ring LAN segment using multiple ports, and will increase network performance by breaking a larger network into more manageable segments.

D-Link's FlexSWITCH is a 24-port, highly flexible backbone switch with network management that supports ATM as well as ISDN and Gigabit Ethernet. You can select to configure in the five-slot chassis up to 24 dual-speed NWay ports and up to 16 100BASE-FX fiber or twisted-pair ports.

Accton's 12-port 10/100-Mbps Layer 3 NWay CheetahSwitch-3612, another very high-speed switch you'll see at the show, comes with optional ISDN, ATM, and Gigabit Ethernet modules.

Also watch for GVC's new 24-port Ethernet switch and the ALW-1123, Accton's NWay Ethernet switch. GVC's switch offers 24 10-Mbps ports plus three optional 10/100-Mbps dual-speed ports, with an expansion module for backbone connection of 200 Mbps. The VFD mini console provides friendly management and monitoring functions. The Accton ALW-1123 has 12 autosensing 10-Mbps switch ports, two auto-sensing 10/100 Mbps, and an optional 100BASE-FX or 100BASE-TX expansion module. It comes with the AcerSwitchMan, easy-to-use monitoring and configuring software.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
Type			
External connections			
Protocols/Connection types supported			
Ports/Speeds supported			
Transmission speeds supported			
Available options			
Volume pricing options			
Delivery options			

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Scanning for the Best Deals



Choosing a scanner type depends largely upon how you plan to use it. Hand-held and portable scanners may be affordable options if you rarely need to scan in documents, but they'll quickly become tiresome if you scan more than a few pages each day. They also can't boast the higher resolutions and more extensive color capabilities of more expensive scanners.

For applications that demand higher-quality output, a sheetfed or flatbed model is a better choice. Flatbed models offer the most flexibility in terms of what you copy, since the object to be scanned is placed on a plate, or bed, of glass. If you frequently copy pages from books, or need to scan in three-dimensional objects, you'll need a flatbed scanner.

Sheetfed scanners accept one sheet of paper at a time. They're particularly good for converting paper documents into electronic form using optical character recognition (OCR) software.

Many sheetfed scanners offer optional multipage feeders for processing large documents. Sheetfed scanners range from the very inexpensive "personal" models to document management systems costing thousands of dollars.

Other scanner choices range from the

very specific slide and photo scanners up to professional-level drum scanners. Drum scanners are the high-end choice because they use more sophisticated sensors called photomultiplier tubes (PMTs) rather than the charge-coupled devices (CCDs) used in other kinds of scanners.

When browsing scanners at the show, keep the following specifications in mind:

Media Some scanners are built for scanning specific types of media, such as slides or photographs. Others are more varied, and can accept slides, photographic negatives, photos, and paper. If your needs are varied, look for a scanner that can handle several types of media, and make sure it's capable of accepting the largest size of paper you plan to scan. Microtek's Skyline TR4000 power scanner, for example, has dual lenses that let you scan 4- by 18-inch originals at up to 2000 dots per inch (dpi), and 12- by 18-inch originals at up to 667 dpi.

Resolution Resolution is a measurement of how many pixels a scanner can sample in a given image, measured horizontally and vertically. Optical resolution is determined by how many pixels it can actually see, such as 600 dpi in one

direction and 600 dpi in the other, which would be read as 600 by 600 dpi. Scanners can insert additional pixels between existing points, creating what's known as an interpolated scan. An interpolated scan might push a 300-dpi image into a 600-dpi scan in this manner.

How much resolution you need depends upon your application. A rule of thumb: For desktop printer output, match the resolution to that of the output device. For professional output, go for the highest resolution possible.

For high-resolution scanning at a mid-range price, look at Microtek's Skyline TR2400 flatbed scanner that captures images at a maximum resolution of 1200 dpi. Debuting at the show, it's garnering interest from hobbyists and professionals alike.

Bit depth Where quality is a concern, consider a scanner's bit-depth capability carefully. Color scanners handle varying numbers of colors. The bit-depth of the scanner corresponds to the number of colors possible. Black-and-white scanners, for example, capture 1 bit, in either black or white. Today, 24-bit color is the color standard mainly because that's what most software and printers can handle.

The ViewStation AS12E, which can be seen in Ultima's booth, is a good example of a top-quality scanner with a practical bit depth.

Number of passes Color scanners scan in different ways. Some scan all three colors—red, green, and blue—in a single pass, and others do each color in a separate pass. Three-pass scanners take longer to scan than single-pass scanners, making single-pass the method of choice.

Software Like most hardware, scanners are dependent upon software for operation. Expect to get drivers, calibration software, and assorted applications with your scanner. For easy software access, look at the Primax G2 600 USB, a 600-dpi flatbed scanner that lets you activate Primax drivers and software applications with just the click of a button.

PRODUCT SCORECARD

Product/Booth#			
Manufacturer contact			
Type			
Media supported			
Resolutions			
Bit depth			
Single- or multiple-pass?			
Software included			
Volume pricing options			
Delivery options			

Falling Prices, Rising Features



If the motherboard is the heart of the PC, the server is the heart of the LAN. Dedicated servers handle specific tasks such as file storage, printing, communications, or database queries.

Today's servers combine hot new features with surprising affordability, and an increasing number of small-business-oriented vendors include additional setup and support help as a matter of course. Several factors come into play when choosing a server. Performance isn't the only consideration; you'll also want to check out a server's usability.

CPU Server performance is highly dependent on the CPUs. Consider the number of CPUs, clock speed, and first and secondary cache. For a small network or a dedicated server, a single processor may be enough; here, go for the highest performance possible. Larger networks, or those with heavy computational loads, should consider servers that offer multiple processors.

While you can pump up your hardware to its maximum, keep in mind the limitations of your network operating system; for example, if you need more than a quad-processor server, consider RISC technology rather than CISC.

Tatung's COMPstation U60 is a mid-range dual-processor Sparc server based on Sun Microsystems' UltraSPARC 60 RISC engines. The Sparc clone performs similarly to its counterparts from Sun Microsystems but is 20 percent cheaper.

Also look for a four-processor system coming from Tatung around June.

Cooling Servers with multiple CPUs and hard drives can run hot unless properly cooled. Look for massive heat sinks and more than one heavy-duty ball-bearing fan that delivers high air volume.

Power supply A server's hard drive is the most common point of failure, but power supplies aren't far behind. If reliable server operation is critical, choose one that uses heavy-duty redundant power supplies. Some manufacturers offer hot-swap options that allow you to change one unit of a redundant power supply without powering down the server. Because line power quality can vary, a high-capacity uninterruptible power supply (UPS) is a necessity.

Storage Type/Capacity The redundant array of inexpensive disks (RAID) provides safe storage and backup for the

Tatung COMPstation U60



network. RAID allows you to string several hot-swappable hard drives together for security. RAID offers varying levels of data security, and can store data across multiple drives to make recovery easier in the event of drive failure.

SCSI drives are the standard for servers because of their ability to multitask commands. Go for the biggest SCSI hard drive your budget will allow. Redundant hard drives protect against failure.

Expansion Look for a good combination of PCI and ISA expansion slots so you can install both 32- and 16-bit cards in the server. As for bays, the more the merrier, for drive possibilities. High-end servers may offer 24 or more drive bays, with optional storage expansion cabinets.

Network management tools Many servers come with management software, such as Intel's LanDesk Server Manager system that you'll find on many of the servers at Computex. It lets managers monitor and manage the network remotely. Mitac's entry-level and mid-range servers are one-to-two- and two-to-four-way solutions based on Deschutes Slot 1 and Slot 2 processors. They come with Mitac's own LAN management software.

PRODUCT SCORECARD

Product/Booth #			
Manufacturer contact			
CPU(s)			
Cooling infrastructure			
Power supply			
Storage type/Capacity			
Expansion			
Network management tools			
Volume pricing options			
Delivery options			